

Final Report
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Pest Management Grant
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Principal Investigators:

Larry Whitted and Associates (formerly Carmean Consulting)
Larry Whitted (formerly Larry Carmean) - Pest Control Advisor
Carolyn Watson - Project Coordinator

Richard Molinar - UC Farm Advisor
Michael Yang - Farm Advisor Assistant
University of California / Cooperative Extension

Sharon Nance - Rural Sociologist
Chue Yang - Conservationist
USDA/NRCS

Howard Yang
Strawberry Grower

Project Title:

Biologically Integrated Strawberry Systems (BISS) in Fresno

Summary:

The Biologically Integrated Strawberry System (BISS) utilized the experience and knowledge of a University of California farm advisor, a Pest Control Adviser, a conservationist, a rural sociologist and a grower to refine and demonstrate environmentally sound and profitable production of strawberries in the San Joaquin Valley. The BISS Project was tailored to the cultural and language needs of Southeast Asian growers. BISS goals were accomplished through field monitoring and networking meetings directed toward the proper identification and monitoring of pests, beneficials, diseases and the safe use of pesticides. In addition, Integrated Pest Management workshops, a bookkeeping/financial management seminar, a grower database, and a bilingual fact sheet on insect and disease controls were either held or developed.

Results and Discussion:

Objective 1

Organize a group of Fresno County Southeast Asian Strawberry growers interested in learning about biologically integrated alternatives available to them.

A group of Southeast Asian strawberry growers interested in learning about biologically integrated system alternatives was formed. The group originally consisted of nine growers. During the year three members withdrew from the program and seven new growers joined the program.

The thirteen growers currently in the program are:

Howard Yang - 8 acres	Vacha Yang - 3 acres	Phen Vue - 6 acres
Yee Vang - 2 acres	Meng Fong Cha - 4 acres	Cher Xeng Thao - 2 acres
May Sia Thao - 4 acres	Touxia Thao - 6 acres	Va Long Chang - 3 acres
Gha & Tria Vang - 4 acres	Ricky Cha - 3 acres	Yang Fong Cha - 6 acres
Thomas Vangyi - 10 acres		

Language and cultural differences slowed the progress of the program this year. In an effort to become more understanding of these differences some members of the advisory team have taken Hmong classes and attended many Hmong community functions. In doing so a greater trust and a better working relationship have been established.

Objective 2

By building upon the existing network within The Highlander (the Hmong Strawberry Cooperative Association), coordinate a series of regular meetings of grower-participants and the BISS Advisory Team to disseminate information and to support the adoption of new pest management techniques.

Funding was received in April, 1997, but the first breakfast meeting was held in February, 1997. The breakfast meetings continued until May, 1997, when harvest began and growers were unable to attend because of field and harvest commitments. Members of the advisory team were present at each meeting and responded to all grower concerns. In May and June members of the advisory team met individually with the growers in their fields and discussed the harvest and any other concerns at issue. The breakfast meetings resumed in January, 1998.

At the breakfast meetings the participants discussed pest management, fertilization practices, irrigation and marketing concerns. The attendance at the meetings varied. Twelve growers attended the March 27, 1998, breakfast meeting.

Objective 3

Conduct a comprehensive field evaluation of each grower-participant's strawberry operation.

The advisory team visited each of the growers' fields in June, 1997. At that time the advisory team evaluated the condition of the plants, irrigation practices, the presence or absence of pests and predators, harvest progress and took soil samples. Each grower received a written field evaluation and an explanation of the report by the project coordinator, conservationist and the farm advisor assistant.

Throughout the season growers expressed increased interest in the insect activities in their fields, the timing and amount of fertilizer applications, the use of alternative fungicides and ways to improve their drip irrigation systems for the next season. Through this interest a relationship of trust and confidence was developed between the growers and the BISS team. Growers now feel comfortable in calling the project coordinator at any time to discuss things they witness in the field.

In March, 1998, soil testing was conducted in each of the participating fields, in addition to the regular monthly nitrogen testing which began in January, 1998.

Objective 4

Monitor grower-participant strawberry acreage for pests and pathogens.

All acreage in the BISS program was monitored regularly for two-spotted mites, predatory mites, other beneficials, Gray Mold and Phytophthora. The growers were taught how to monitor and what to look for. Mites were monitored by taking 50 to 100 leaf samples from throughout the field. These leaf samples were brushed, mites were counted using a microscope and the results recorded. A copy of the results was given and explained to the grower. Predatory mites were released in some of the BISS fields introducing the grower to their use.

The same monitoring process was used in all the fields. Graphs and charts were given and explained to all growers. Copies of all field reports were given to members of the advisory team, the grower and the PCA representing the packing house each grower has contracted with to sell his crop. (See attachments)

The relationship between the growers and the packing sheds has been strained. Because of grower concerns the advisory team shares crop information with the packing house field advisors. This information sharing has helped to improve the relationship between the growers the sheds and the BISS project. All the information gathered was used to develop a permanent database. (See attachments)

Mite and disease pressures were low in 1997. Because of low rainfall growers made only one fungicide application. A concern of the growers was the use of the same fungicide year after year. This issue was discussed with the advisory team and next year efforts will be coordinated with the packing house PCAs to alternate fungicides.

As two-spotted mite populations appeared releases of three different predatory mites (*P. persimilis*, *N. californicus*, *M. longipes*) were made. Both predators and prey were monitored weekly through harvest. (See attachments)

Objective 5

Demonstrate biologically integrated strawberry systems through workshops conducted on field sites.

Two field days were held. The first field day was held on July 17, 1997 and was attended by 40 growers. (See attachments) The three topics covered at the session were 1) alternatives to Methyl Bromide, 2) new research updates and 3) biological control of pests in strawberries. The session was scheduled to last four hours, but there was so much grower interest, the program went five and one half hours. At the conclusion of the workshop many growers showed an interest in becoming participants in the BISS program.

The second field day was held on February 24, 1998 and took place at a grower-participant's field. The focus of the afternoon session was insect and disease management. The growers were shown how to monitor for grubs (*Hoplia* spp.) and control options were discussed. There was also discussion of ongoing research regarding the effectiveness of alternatives to methyl bromide. Growers were able to observe the growth of the strawberry plants under the different treatment options.

Hmong radio was used to promote the workshops and special talk show segments aired to explain BISS and answer questions from listeners regarding their crops and the program.

A financial management and bookkeeping workshop was held on March 24 at the Hmong-American Women's Association meeting room and was conducted by Dr. Carl Pherson an Agricultural Economist from California State University Fresno and Bradley Low and Yvette Peterson, both Certified public Accountants. Over 60 growers attended the two hour workshop.

Objective 6

Develop & distribute a pictorially graphic bilingual fact sheet (Hmong and English) on Botrytis Rot (Gray Mold) & Mites.

A bilingual fact sheet on Botrytis Rot was developed and has been distributed to about 40 growers.

Objective 7

Compare the costs of production and yields in a conventional and an IPM field.

In 1997 two field sites were split. Choy Nam Saeteurn treated five acres of his field with predatory mites when two spotted mites first appeared. The remaining five acres did not receive treatment as requested by the grower. As a result harvest was discontinued in the untreated five acres.

Another grower treated only seven rows of his eight acres with predatory mites. Control of two-spotted mites was maintained in the seven rows. No mite problems occurred in the remainder of the field until two weeks before the conclusion of harvest. No additional treatments were recommended.

The side by side demonstration of using biological control taught the growers an alternative to pesticide use that was both effective and safe. More side by side field practice comparisons will be incorporated into the program during the 1998 season.